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ABSTRACT

The socioeconomic characteristics of a generalizable sample of recently displaced farm households in North Dakota were compared with characteristics of a random sample of farmers who were still operating their enterprises in 1985. Data were collected in 1986 by phone and mail surveys from 162 displaced and 752 active farmers. The farm characteristics of displaced operators mirrored those of the general farming community. No marked differences were found in the proportion of acres owned, rented, or leased to others between former and current farmers. Moderate sized farms--gross farm incomes between $40,000 and $100,000--were most common and represented the largest category of displaced farmers. Off-farm income was the only structural characteristic analyzed which differed markedly between former and current farms. Current farmers worked nearly twice as many years off the farm on average compared with former farmers, 8.4 and 4.8 years respectively. Analysis of personal characteristics showed displaced farmers significantly younger, more educated, newer to the county, and with larger families than current operators. Discriminant analysis showed that the personal characteristics of farm operators explained less than 10% of the variance. Findings of the study indicated that insight into farm structure or operator's traits offers little benefit toward understanding displaced farmers. (JHZ)

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By

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A DEMOGRAPHIC PROFILE OF DISPLACED FARMERS DUE TO ECONOMICALLY DEPRESSED TIMES

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The displacement of farm households due to current economically depressed conditions in American agriculture is a topic of key concern in most agricultural states. Record numbers of farm foreclosures and bankruptcies (University of Colorado 1985) frame an impressionable, albeit imprecise, picture of the struggle in rural America. Estimates of financially strained operators range from 20 percent nationally (Johnson et al. 1985) to nearly one in three for the Midwest and Great Plains states (Ekstrom et al. 1986; Murdock et al. 1985). The present agricultural economy will likely force many of these highly leveraged producers to seek alternative employment within the next few years. Such a transition poses many issues for policy makers ranging from fiscal concerns to social service needs. It is advantageous therefore, for researchers to acquire and disseminate accurate information about (1) the characteristics of displaced farm households, (2) their transition to nonfarm employment, and (3) the resultant implications for rural and urban communities. These data should enhance appropriate dialog and strategy building among policy brokers aimed at mitigating or mediating deleterious consequences.

The literature reveals that studies about recently displaced farmers are still exploratory. Much of the work focuses on typologies which attempt to project common traits among displaced producers. Aspects commonly examined include debt levels (see Runge 1986; Leistritz et al.

1986) and characteristics of farm operators or farming enterprises (Leholm et al. 1985; Ekstrom et al. 1986; Bultena et al. 1985; Murdock et al. 1985). Researchers, however, have failed to establish a relationship between the independent variables identified (e.g. financial strain, operator's characteristics, farm structure) and those corresponding to displaced farmers. As a result of this major drawback, policies based on these typologies are tenuous at best. This notion is supported by the findings of Murdock et al. (1986) which suggests that traditional explanations of success in agricultural are poor predictors for the current farm crisis.

Few studies have directly investigated farm households displaced because of financial pressure. The handful of attempts which have directly surveyed this audience encompass only small or nonrepresentative samples (Heffernan and Heffernan 1985; Graham 1986) or rely on secondary information (Otto 1985), thus their findings have limited use. An important need exists, therefore, to explore representative samples of displaced farmers in order to better understand who is leaving farming and what consequences that poses.

This paper addresses that concern by examining the socioeconomic characteristics of a generalizable sample of displaced farm households in North Dakota. A list of all identifiable operations in the state displaced between 1981 and 1985 because of financial pressures was used as our data base. These data offer a realistic snapshot of those who recently left farming because of financial constraints. We contrast the characteristics of these displaced operators with a random sample of producers who were still operating their enterprise in 1985. This

comparison provides us a unique opportunity to examine differentials between the two populations. Finally, we test the discriminating ability of two theoretical approaches used to explain the changing structure of American agriculture.

Theoretical Frameworks Guiding Research

Researchers have found various theoretical frameworks useful in explaining shifts in the structure of American agriculture. Two of the more widely known perspectives focus on structural conditions (see Busch and Lacy 1983) and the process of adoption and diffusion (see Rogers 1983). In this analysis, we use these perspectives as guide posts to help identify critical dimensions to explore. Specifically, we wish to examine if these perspectives are effective in explaining the restructuring now occurring in American agriculture. In particular, are these theoretical frameworks useful in predicting displaced farmers? The preliminary work by Murdock et al, (1986) casts doubt on the explanatory power of these two perspectives. Their analysis centered on farmers likely to be displaced because of high debt loads. Our study builds on their work by examining operators who were forced out of farming because of financial exigency.

Structural conditions, the first perspective we explored, are often linked to success in farming. A philosophy imbedded in many agricultural policies favors large, capital-intensive enterprises. The most obvious are commodity programs which are directly tied to size and felt to be deleterious to small producers (see Tweeten 1985). Also, advances in biotechnology and engineering continue to benefit the larger producer not

to mention economies of scale (see Office of Technology Assessment 1986). Additional structural characteristics associated with shifts in agriculture include ownership, organizational features (e.g. renting or leasing arrangements), and type of operation (see Rodefeld et al, 1978). Thus, this perspective directs us to examine the structural dimensions of farm operations which dissolve because of economic pressures with those which continue to operate.

The second perspective used to guide our analysis comes from the adoption/diffusion literature (see Fliegel and van Es 1983; Rogers 1983). It complements the structural framework in that is assumes operators with certain characteristics are more likely to adjust to changes in agriculture. For example, this literature shows that the young, better educated, and more cosmopolitan producers more easily adapt to and employ new technologies, advanced techniques, and innovative practices (see Rogers and Shoemaker 1971; Carlson and Dillman 1983). As a result, this perspective directs us to compare personal characteristics of displaced operators with those still in farming.

Data and Methods

Two separate surveys form the basis for this study. The first survey targeted North Dakota farm and ranch households displaced for reasons other than retirement between 1981 and 1985. We compiled a list of 432 such producers from contacts with various state agencies. In the Fall of 1986, we interviewed 260 of these operators by phone and the remainder by mail. Our total useable response was 169; 21 of which were

from former farmers living outside the state. We used screening questions to isolate respondents who (1) no longer operated a farm, (2) did not plan to operate a farm in 1987, (3) had quit farming after 1980, (4) were less than 65 years of age before ceasing operations, (5) sold more than $2,500 of farm products during the last full year of farming, and (6) considered farming to be their primary occupation prior to quitting.

We assessed the extent of relocation undercount, especially those who moved out-of-state by examining response rates. The data revealed that 10 percent of the addresses from the master list were from out-of-state and 12 percent of the completed surveys fell into that category. Thus, we assumed no locational bias existed in our data set.

The second survey gathered information on active farmers. We obtained the data from a random telephone survey of North Dakota farmers conducted in the spring of 1986. The operators we interviewed were members of a panel of North Dakota farmers and ranchers established through a survey conducted in the spring of 1985 (Leholm et al. 1985). Again, we incorporated initial screening questions into the 1985 survey to ensure that all respondents were (1) less than 65 years old, (2) operated a farm, (3) considered farming to be their primary occupation, and (4) sold at least $2,500 of farm products in 1984. This procedure, we felt, narrowed the sample to full-time farmers with active careers.

In the 1986 survey, attempts were made to contact all 933 members of the original panel. Of these, 759 had responded, 99 had refused to participate, 18 had ceased to operate a farm or ranch, 4 were deceased, and 53 were unable to be contacted. The 759 farmers who were still farming and who had completed usable questionnaires constitute the data

base for the current farmers in this study. A comparison of respondent characteristics from the 1986 survey with data from the 1982 Census of Agriculture for North Dakota shows that the sample adequately represents North Dakota farms whose operators consider farming to be their principal occupation.

North Dakota serves as an appropriate study site because it had an average debt-to-asset ratio twice that of the national average during the survey period (i.e., over 33 percent). Additionally, North Dakota had the second largest proportion of farm population (16 percent) for all states in 1980.

We conducted the analysis in three separate stages. First, we wanted to determine if the farm or ranch operations of those displaced since 1980 differed significantly from operating enterprises. The literature on the changing structure of agriculture leads us to hypothesize that the structural characteristics of operations dissolved for financial reasons differ significantly from those which remain viable. In particular, we expected to find differences based on size, type of ownership, type of enterprise, and amount of off-farm employment.

To test this contention, we selected various measures of these components from the questionnaires. The indicators of size were twofold; total acres operated, and gross farm income. The later, we contend, is more sensitive to variations in type of operation (e.g., 1000 acres of ranch land is qualitatively different from 1000 acres of cropland). The measure of type of ownership was a categoric indicator based on self-reporting with four dimensions, sole proprietorship, partnership, family-held corporation, and other. We also classified enterprises into four

types, crop, beef, dairy, and diversified based on which of the four types generated more than 50 percent of that enterprises' gross farm income. If no single source accounted for more than 50 percent of the gross farm income, we viewed it as a diversified farm. Finally, we used a twofold measure of off-farm employment. First, we asked respondents to indicate the number of days they worked off the farm and second the number of years they held that off-farm job. Former farmers based their responses on their last production year.

The second stage in the analysis was to determine whether personal characteristics of the operators differed statistically between former and current farmers. Once again, the literature leads us to hypothesize that such a differential should be found. Adoption and diffusion research suggests that operators vary markedly in production practices with the young, better-educated, and more cosmopolitan farmers being more willing to use technical innovations, nontraditional techniques, and fewer risk aversive approaches (see Rogers 1983; Carlson and Dillman 1983; Rogers and Shoemaker 1971).

To examine this contention, we compared the distribution of former and current farmers on various personal dimensions. Specifically, we investigated the relationship between age, gender, marital status, household size, education, the year the operator started farming, and the number of years the producer had lived in the county (former farmers were asked to base responses on their last production year).

We used a twofold analytical approach. First, we examined the relationship between former and current farmers using a chi square test. The significance level was set at 95 percent. Second, we employed

discriminant analysis to examine the explanatory ability of indicators representing the two theoretical approaches used to interpret shifts in agriculture.

Findings

Results reported in Table 1 indicate that farmers and ranchers displaced since 1980 did not operate significantly different enterprises than those currently in business. The distribution of enterprises by size and type failed to show a statistically significant difference at a 95 percent confidence level. The only structural indicator which did reveal a significant difference was off-farm labor.

The farm characteristics of displaced operators, therefore, mirrored those of the general farming community. For example, most of the farmers displaced during the first half of the 1980's operated farms between 500 and 1,500 acres, similar to the current distribution of farms (see Table 1). Similarly, we found no marked difference in the proportion of acres owned, rented, or leased to other between former or current farmers. Likewise, the type of farm or organizational structure of the enterprise varied little between former and current farmers in North Dakota. Most of the operations in the state were cash crop farms with sole proprietorships. Finally, we found no important differences between former and current farmers based on gross farm income. The moderate sized farms (i.e., those with gross farm incomes between $40,000 and $100,000) were most common and represented the largest category of displaced farmers.

Off-farm income was the only structural characteristic analyzed which differed markedly between former and current farms (see Table 1). Current farmers worked significantly more years and days off the farm compared with those displaced from farming. In brief, current farmers worked nearly twice as many years off the farm on average compared with former farmers, 8.4 years and 4.8 years respectively. And, of those who were working, current farmers worked roughly 25 more days annually off the farm than former farmers.

Our analysis of personal characteristics of operators revealed a distinctly different picture. The differences between former and current farmers were statistically significant for each indicator except gender (see Table 2). The displaced farmers, on the average, were younger, married, had larger families, and were more educated. Most (54.4 percent) of displaced farmers began farming in the 1970's compared with fewer than one third of the current farmers. Additionally, former farmers were newer to the county, as measured by length of time lived in the county, compared with those currently operating farms.

The second stage of our analysis was to explore the explanatory power of our two categories of indicators. Because the structural dimensions of former and current farmers were not statistically different, we skipped any further investigation regarding those variables. Instead, we focussed solely on the personal characteristics of operators. We tested the discriminating power of six of the seven variables (marital status was excluded because of its categoric nature) using discriminant analysis. At best, we could explain less than 10 percent of the variance. And, the discriminating ability of the model offered little improvement

above chance. Our findings support the conclusions reached by Murdock et al. 1986 and indicate that insight into farm structure or operator's traits offer little benefit toward understanding displaced farmers.

Summary and Conclusions

Our research confirms the inadequacies of two existing theoretical perspectives for explaining the current restructuring in American agriculture. Historically, success in farming could be directly linked to structural dimensions of the farm operation. Ironically, present farm policies perpetuate that situation. However, this time honored perspective has limited value for interpreting the current crisis. Likewise, personal characteristics of the operator are not helpful even though they are useful in distinguishing who most likely adopts practices, techniques, and technologies keyed to success in farming.

This situation presents a significant research challenge. Our study and others (Murdock et al, 1986; Leholm et al. 1985) expose various areas researchers should explore. First, our limited success in using indicators which characterize the farm or operator implies that researcher should perhaps consider examining macro level variables which characterize such things as the national economy or world markets. Macro level variables may encompass circumstances or trends which distort micro level analysis. The distribution of displaced farmers by year they entered farming is one illustration of the potential usefulness of this approach. Our data reveal that more than half (54.4 percent) of the North Dakota farmers displaced between 1980 and 1986 started farming during the

volatile 1970s, a period characterized by dramatically fluctuating interest rates, land prices, farm product prices. This was true for only 31.5 percent of the current farmers surveyed.

Second, we failed to ask farmers information about how their operation changed over time. Our study cannot detect how the practices, management, or expansion plans of the operation influenced its viability. Likewise, we did not effectively tap into the labor support system of the household. Work by Salamon and Davis-Brown (1986) indicates that management strategies and use of labor resources are risk aversive techniques effective in enhancing success in volatile economic times. Additionally, their Illinois study points out the qualitative dimension which is important in understanding displaced farmers.

Third, researchers need to address consequences of displacement. Our results suggest that displaced farmers tend to be younger, more educated, and have larger households than the general farm population. The implications of this observation are important for policy makers to consider. For example, what is the impact on schools, churches, and voluntary associations? Outmigration of young educated residents is likely to be detrimental to revitalizing local governments and social services. Finally, what are the general fiscal ramifications? The findings of this study offer evidence which challenge existing conceptions about displaced farm households and they highlight new directions which may lead to more effective means to mitigate an already deleterious situation.

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Table 1. Comparison of Selected Structural Characteristics of Farm Operations for Displaced and Current Farmers in North Dakota, 1986

Item	Unit	Displaced Farmers	Current Farmers	
Total Acres Operated				
Average	Acres	1,466.0	1,556.9	
Distribution:				
Less than 180	Percent	1.9	2.1	
180 to 499		10.5	8.6	
500 to 999		23.5	25.6	
1,000 to 1,499		29.6	26.2	
1,500 to 1,999		11.7	15.6	
2,000 to 2,999		15.4	12.5	
3,000 to 5,000		5.6	6.6	
More than 5,000		1.9	2.7	
TOTAL	Respondent	162	752	x^2=4.19
Acres Owned				
Average	Acres	761.4	903.6	
Distribution:				
Less than 25%	Percent	30.3	27.9	
25% to 49%		22.8	19.3	
50% to 74%		24.1	21.4	
Above 74%		22.8	31.4	
TOTAL	Respondent	162	752	x^2=4.80
Acres Leased from Others				
Average	Acres	998.4	878.5	
Distribution				
Less than 25%	Percent	98.2	95.5	
25% to 49%		1.9	1.6	
50% to 74%		-	.9	
Above 74%		-	2.0	
TOTAL	Respondent	162	752	x^2=2.46
Acres Rented to Others				
Average	Acres	311.1	398.8	
Distribution				
Less than 25%	Percent	23.5	29.5	
25% to 49%		19.1	20.4	
50% to 74%		26.5	21.1	
Above 74%		30.9	30.0	
TOTAL	Respondent	162	752	x^2=3.74
Farm Type				
Crop	Percent	59.3	68.6	
Beef		16.1	12.8	
Dairy		10.5	6.3	
Diversified		14.2	12.4	
TOTAL	Respondent	162	752	x^2=6.61
Type of Business				
Sole Proprietorship	Percent	87.0	80.3	
Partnership		8.9	16.6	
Family-Held Corporation		4.1	2.7	
Other		-	0.4	
TOTAL	Respondent	162	752	x^2=6.60
Gross Farm Income				
Average	Dollars	101,045	110,266	
Distribution				
Less than $10,000	Percent	5.6	6.7	
$10,000 to $19,999		2.5	3.1	
$20,000 to $39,999		14.8	15.0	
$40,000 to $99,999		42.0	39.4	
$100,000 to $249,999		25.3	29.0	
$250,000 and over		9.9	6.9	
TOTAL	Respondents	162	752	x^2=2.85
Number of Years at Off-Farm Job				
Average	Years	4.8	8.4	
Distribution				
1 year	Percent	20.3	12.7	
2 years		21.6	9.1	
3 to 5 years		28.4	24.9	
6 to 10 years		21.6	27.3	
More than 10 years		8.1	26.1	
TOTAL	Respondents	74	165	x^2=17.03*
Number of Days Worked Off-Farm				
Average	Days	90.3	114.5	
Distribution				
1 to 24 days	Percent	32.8	13.5	
25 to 49 days		10.9	12.9	
50 to 99 days		18.8	20.9	
100 to 149 days		7.8	16.0	
150 to 199 days		7.8	18.4	
200 or more days		21.9	18.4	
TOTAL	Respondents	64	163	x^2=15.05*

Table 2. Comparison of Selected Personal Characteristics of Displaced and Current Farm Operators in North Dakota, 1986

Item	Unit	Displaced Farmers	Current Farmers	
Age of Operator				
Average	Years	41.1	45.1	
Distribution				
Under 35 years	Percent	30.9	22.1	
35 to 44 years		35.8	25.1	
45 to 55 years		21.0	23.9	
55 to 64 years		12.4	28.9	
TOTAL	Respondent	162	752	$X^2=24.48$
Sex of Primary Operator				
Male	Percent	96.9	98.7	
Female		3.1	1.3	
TOTAL	Respondent	161	752	$X^2=2.59$
Marital Status				
Single	Percent	3.8	10.9	
Married		89.4	87.1	
Separated or Divorced		6.9	1.1	
Widowed		-	0.9	
TOTAL	Respondent	160	752	$X^2=29.95$*
Household Size				
Average	Number	3.9	3.4	
Distribution				
1	Percent	6.3	4.8	
2		18.9	26.7	
3		13.2	21.3	
4		27.0	23.0	
5		20.8	16.2	
6 or more		13.8	8.0	
TOTAL	Respondent	161	752	$X^2=15.58$*
Education of Operator				
Eight grade or less	Percent	5.6	14.5	
Some high school		3.1	8.5	
Completed high school		38.5	36.3	
Postsecondary school		38.5	27.4	
Completed College		14.3	13.3	
TOTAL	Respondent	161	738	$X^2=143.11$*
Year Started in Farming				
1940 to 1944	Percent	3.1	5.6	
1945 to 1949		5.6	10.4	
1950 to 1954		3.7	10.6	
1955 to 1959		6.8	12.1	
1960 to 1964		9.3	10.8	
1965 to 1969		11.7	9.6	
1970 to 1974		23.5	15.3	
1975 to 1979		30.9	16.2	
1980 to 1984		5.6	9.4	
TOTAL	Respondent	162	752	$X^2=38.75$*
Years Lived in County				
Average	Years	31.1	37.9	
Distribution				
Less than 20 years	Percent	22.8	12.4	
20 to 30 years		17.9	17.4	
30 to 40 years		34.6	24.2	
40 or more years		24.7	46.0	
TOTAL	Respondent	162	752	$X^2=30.14$*